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STUDY OF TIME LAPSE PROCESSING  
FOR DYNAMIC HYDROLOGIC CONDITIONS

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PROCESSING FOR DYNAMIC HYDROLOGIC  
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# TYPE I PROGRESS REPORT

- ✓A) Title: STUDY OF TIME-LAPSE DATA PROCESSING FOR DYNAMIC HYDROLOGIC CONDITIONS

ERTS-A PROPOSAL 342-B

- B) GSFC ID PR154
- C) Problems Impeding Progress - None
- D) Accomplishments:

(I) During Reporting Period

(a) Equipment

No modifications or additions have been made to ESIAC during the period covered by this Progress Report.

(b) Data Measurements:

For Dr. C. C. Reeves

Dr. C. Reeves visited SRI during the week of September 24 through September 28, 1973. At his request ERTS scenes (MSS 5 and 7) for the "Lubbock Area" and the "Double Lakes" area were entered in ESIAC for 11 cycles from 29 July 1972 through 24 July 1973.

The scene, "Lubbock Area," covers about 70 km high; the "Double Lakes" area, entered at maximum zoom capability, covers 9 km high. Reeves viewed both scenes via time-lapse mode and via slicing techniques. Particular attention was paid to the Double Lakes area. Both the South Playa and the North Playa of the Double Lakes area were sliced, individually, for coverage of water only and also water plus mud. These

area counts will be compared, by Reeves, to ground-truth data. A series of film sequences were prepared at SRI showing the changes of the Lubbock area and Double Lake region through the date sequence noted above, as viewed on MSS-5 band alone, MSS-7 band alone, and in combination, to create a "false color" presentation. In addition, both slow-frame speed sequences (i.e., 1 frame per second and fast-frame speeds sequences of 3 frames per second) were prepared. These 9 film sequences were combined into a film loop for presentation by Dr. Reeves at the NASA Conference held October 23 - November 2, 1973.

(2) For Dr. R. Turner

Dr. Turner requested that SRI take additional measurements for the purpose of extending his original desert vegetation measurements, plus correcting some possibly erroneous measurements of the North Patagonia scene completed previously, particularly cycles 14 (26 March), cycle 15 (13 April), and cycle 16 (1 May) of 1973. As a result of this effort the following data was sent to Turner:

- 1) Overlay (128 km height) showing location of seven transects across the North Patagonia scene.
- 2) Radiance profiles along the seven transects (listed as  
Y135 - Lower Sabino Canyon  
Y177 - Mile Wide Site No. 3  
Y182 - Mile Wide Site No. 1  
Y244 - SMR #1 and Lower Benson Area  
Y263 - Central N. Patagonia Scene  
Y327 - Mine Transect  
Y378 - Old Baldy Transect)  
for band 5 and band 6 respectively, on cycle 14, 15, and 16.  
Grey scales and grid spacings are also included;

- 3) Photographic prints of masks created in the reevaluation of Cycles 14, 15, and 16, N. Patagonia Scene. They include:  
Cycle 14 at 1.25:1 Ratio, Count 20,500 (Pix No. 7);  
Cycle 15 at 1.25:1 Ratio, Count 37,061 (Pix No. 6);  
Cycle 16 at a series of ratios:

Ratio 1.10:1, Count 120,000 Pix No. 8  
Ratio 1.20:1, Count 34,960, Pix No. 1  
Ratio 1.25:1, Count 15,450, Pix No. 2  
Ratio 1.30:1, Count 14,450, Pix No. 3  
Ratio 1.50:1, Count 2,600, Pix No. 4  
Ratio 2.00:1, Count 400, Pix No. 5

3. For Dr. E. J. Pluhowski

Dr. Pluhowski visited SRI the week of October 16, 1973 for the purpose of studying the patterns and pattern-changes of sediment plumes in the vicinity of

- a) South Shore - Lake Ontario
- b) Central Ontario (Genesee River)
- c) W. Central Ontario
- d) Niagra - Western Region
- e) Eastern Ontario

from ERTS scenes dating from 20 August 1972 through 3 September 1973.

Interpretation of these patterns were made by Dr. Pluhowski viewing these scenes in color on the ESIAC using various combinations of MSS 4-5-6 or 7. Considerable time was spent in judging which combination of spectral bands yields the most detail. Colored 35 mm photoprints were made of each pattern as seen on the ESIAC color monitor.

4. For Dr. M. Meier

No work was processed for Dr. Meier during this period.

5. For Dr. F. Ruggles

No work was processed for Dr. Ruggles during this period.

6. For Mr. E. Hollyday

No work was processed for Mr. Hollyday during this period.

(II) Plans for Next Reporting Period

(a) Equipment

No additions or modifications to the existing ESIAC are planned for the next reporting period.

(b) Data Measurements:

1. For Dr. F. Ruggles

Dr. F. Ruggles is expected to complete measurements on ESIAC by 10 November 1973. This includes data measurements and interpretations from static views of selected scenes, as well as time-lapsed sequences.

2. For Dr. M. Meier

Work will begin on measurement and interpretation of glacier scenes plus continuation of the evaluation of snow measurement techniques.

3. For Dr. C. Reeves

No additional work is planned for the next period.

4. For Dr. R. Turner

Continuation of evaluation of desert vegetation changes as new ERTS scenes are received.

5. Dr. E. Pluhowski

No additional work is planned.

6. For Mr. E. Hollyday

No additional work is planned.

E) Conference Attended

Mr. S. M. Serebreny made a presentation before the Earth Resources Discipline Panel and Working Group in Interpretive Techniques to review the progress and accomplishments during the past year in NASA Contract NAS5-21841, "Study of Time Lapse Data Processing for Dynamic Hydrologic Conditions."